

## **ABSTRACT**

The objects of the invention are to provide a low cost, stable, portable, and rugged field-use device that measures wet density, moisture content, and dry density in soils that have been constructed for use as road beds and building foundations. This data is used to ensure the quality control of the constructed foundation. The present invention integrates the complex science of soil mechanics with electrical engineering to provide efficient evaluation of soil materials that are used in civil construction.

The Electrical Density Gauge (EDG) invention provides maintenance free, and rapid measurement of the electrical dielectric properties of soil that can be related to soil wet density, moisture content, and dry density. Because soils have such a wide variety of characteristics that affect the electrical dielectric properties, it is necessary to employ the sand cone test as a calibration means for the various specific types of soils. The frequency of the sand cone tests required for good accuracy and correlation is the same as that already practiced when using the nuclear density gauge.